



# The Standard



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The Newsletter of the Measurement Quality Division, American Society for Quality

September 2009



# The Standard

Vol 23, No. 3, September 2009

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## Letters to the Editor

*The Standard* welcomes letters from members and subscribers. Letters should clearly state whether the author is expressing opinion or presenting facts with supporting information. Commendation, encouragement, constructive critique, suggestions, and alternative approaches are accepted. If the content is more than 200 words, we may delete portions to hold that limit. We reserve the right to edit letters and papers.

## Information for Authors

*The Standard* publishes papers on the quality of measurements and the measurement of quality at all levels ranging from relatively simple tutorial material to state-of-the-art. Papers published in *The Standard* are not referred in the usual sense, except to ascertain that facts are correctly stated and to assure that opinion and fact are clearly distinguished one from another. The Editor reserves the right to edit any paper. Please single space after sentences and use Times New Roman, 12 pt font.

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## FROM THE DESK OF THE EDITOR/PUBLISHER

*The front cover:* A photo of our new pop-up display at the MQD booth during this year's NCSLI Workshop & Symposium in San Antonio, Texas.

It is super easy to put up and take down (I've done both) and has a case that allows it to be taken as check luggage on planes, in the trunk of a good sized car, or wheeled through the lobbies of your favorite meeting facility. Thanks go to Dilip (who is sitting with yours truly in the photo) for making the time and taking the diligence to get us the most bang for our buck. We are also purchasing a slightly smaller model for local section and regional meetings that we will be supporting in the future where it was impractical to send/set up a booth in the past.



Thank you to all who stopped by the MQD booth at this year's NCSLI conference. It was nice to see old friends and meet new ones. We gave away two signed copies of *The Metrology Handbook* from the booth, and to my recollection, had one of the largest traffic flows in recent memory. I hope we were able to answer all your questions and we look forward to seeing you at MSC 2010 in March at Pasadena in California. Please stop by our booth, or attend one of our sessions or tutorials and say hello.

And last but certainly not least, we will be publishing a special edition of [The Standard](#) at the end of the year (I still need to get #60). It will contain all 60 columns of *The Learning Curve*. It will be in addition to the quarterly edition of [The Standard](#) that will be published in December, 2009.

*The Standard* is published quarterly by the Measurement Quality Division of ASQ; deadlines are February 15, May 15, August 15 and November 15. Text information intended for publication can be sent via electronic mail as an attachment in MS Word format (Times New Roman, 11 pt). Use single spacing between sentences. Graphics/illustrations must be sent as a separate attachment, in jpg format. Photographs of MQD activities are always welcome. Publication of articles, product releases, advertisements or technical information does not imply endorsement by MQD or ASQ. While *The Standard* makes every effort to ensure the accuracy of articles, the publication disclaims responsibility for statements of fact or opinion made by the authors or other contributors. Material from *The Standard* may not be reproduced without permission of ASQ. Copyrights in the United States and all other countries are reserved. Website information: MQD's homepage can be found at <http://www.asq.org/measure>. © 2008 ASQ, MQD. All rights reserved.

## CHAIR'S CORNER

By Jay L. Bucher



As my predecessors have said before me: "It is my distinct pleasure to serve as the Chair of the Measurement Quality Division" for the 2009/2010 year. The leadership and support we received from Woody Niemann has been outstanding. Thanks, Woody, for not only taking the helm, but steering us in the right direction. And congratulations on being selected to the Max J. Unis award, MQD's highest honor.

We have also had other individuals step up to the plate in the past few months. Our new Secretary is Mike Boothe; and new Historian is Brandon Downing. Elias Monreal has also volunteered to be the division's Voice of the Customer representative. Thanks to all of you for helping to support MQD by volunteering your time and efforts.

Chris Grachanen is our Treasure for another year, and Dilip Shah has volunteered to be our Chair-elect. I cannot express enough gratitude to these guys for staying the course in their support and dedication to the Measurement Quality Division. Besides their corporate knowledge and professional demeanor, it is always nice to know there are those one can always count on when it is crunch time... Chris and Dilip are the epitome of such individuals. I would also like to thank Phil P., Woody, Chris, Dilip and Heather Wade for contributing to [The Standard](#). Their articles and insight into today's problems and solutions have been the mainstay in keeping our readers informed and involved.

And finally, I'd like to thank Woody, Chris and Dilip for continuing to contribute articles for publication in *QP* (*Quality Progress*, ASQ's monthly magazine) in support of the *Measure For Measure* column.

As some of you who visit our website at [www.asq.org/divisions-forums/measure/index.html](http://www.asq.org/divisions-forums/measure/index.html)

many have noticed, there has been many changes over the past few months. I hope you agree for the better. We continue to make improvements and upgrades as time goes by. One of the changes we are instituting is that all but the last four (4) editions of *The Standard* will be available to anyone who logs into our website. You no longer have to be a member of MQD to have access to our archived volumes. Once I can put together an accurate list of all the table of contents from the previous editions we now have on line, you can search that document and find the articles from the past that you may have missed. As stated, the latest four editions will be for members only, but as time goes by, anyone can see those, too.

While I'm on the subject of change, we did some research and found that there is no requirement for the division to have regional councilors. However, except for those that are officers, none of them have ever participated in any of our conference calls, to the best of my knowledge, in the past five years. If they don't participate for four hours time during the year (our teleconference calls), and the officers never hear from them, why bother with the position? So, there was a vote during our quarterly teleconference call (held at this year's NCSLI Workshop & Symposium in San Antonio, Texas on July 29th) and the motion to discontinue having regional councilors was passed by unanimous vote.

I would like to thank those of you who have worked behind the scenes for many years to make MQD the successful division that it is, and hope that you continue those endeavors. If you have the extra time and wish to step up as an officer or to chair a committee, please don't hesitate to call me or one of the officers listed on the last page of each edition *The Standard*.

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## The NCSLI Conference Report (July 26-30, 2009)

*By Jay Bucher*

This year's National Conference of Standards Laboratories (NCSL) International Workshop and Symposium in San Antonio, Texas, may not have had as many attendees as in years past, but the enthusiasm and dedication within the metrology community was present and well accounted for. This could be seen by the active participation in the sessions and workshops.

Dilip Shah and I both conducted tutorial workshops, and the participants were as animated and involved as ever, with some attending several of the workshops offered by the various organizations. The conference center was located next to the NCSLI headquarters hotel and made for easy access throughout the week. Yes, we had the high temperatures, but an active air conditioner in all facilities more than compensated. As a matter of fact, during a couple of the lunches, people were seen in long sleeve shirts or with light jackets on during the meal. To say it was a little cool was an understatement.

MQD raffled off two copies of The Metrology Handbook, both of which were signed by no less than six authors. The winner on the first day was Phil Graham from Northrup-Grumann; and on the second day, the winner was Diane Jones-Albright with AcuCal. Congratulations to both. We hope you enjoy this rare copy since getting authors together to sign the book is a rare event. We have included some photos from this year's conference on the following pages.

ASQ MQD wishes to thank NCSL International for providing booth space to promote our common interest in Metrology related issues.

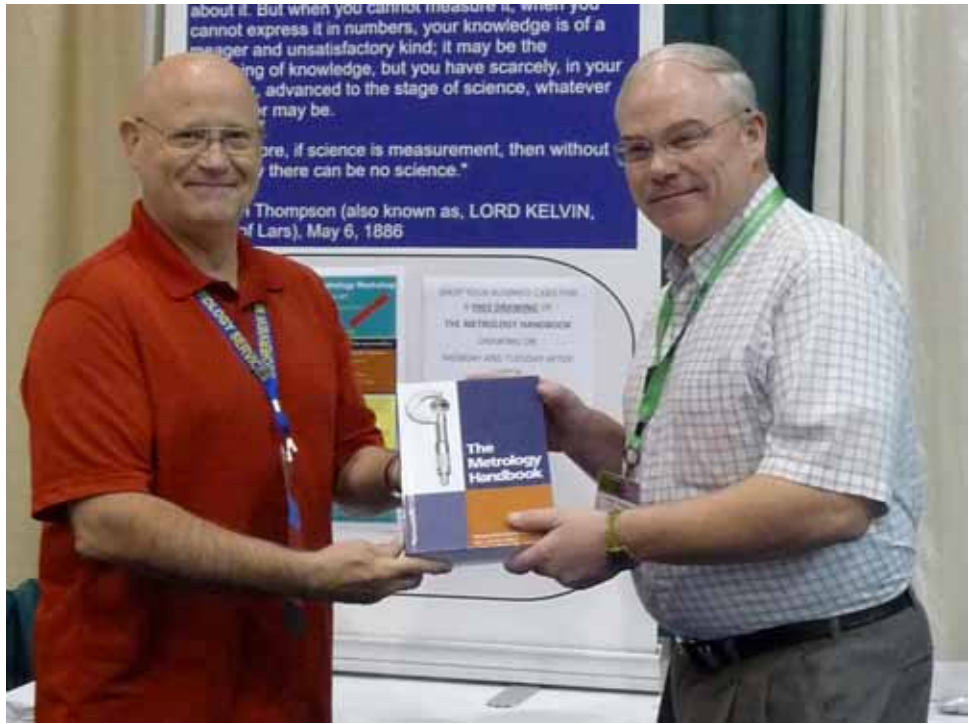
### **Other Activities:**

On July 31st, I was able to proctor the CCT (Certified Calibration Technician) exam for four individuals (five scheduled with four showing up). Three of the individuals passed, so their names will join those few who already have achieved their certification and received their CCT challenge coins. Dilip will be conducting a CCT refresher course at MSC 2010, and we will try to proctor an exam during that same time period. Stay tuned for more information.

Last but not least, thanks to Dilip Shah for the photos of this year's conference. Those that you see through out this edition, including the cover, were taken either by him, or with his camera. Thanks, again, Dilip.



**MQD's new roll-up display... with an area for messages or video projections.**



**Phil Graham (above) and Diane Jones-Albright  
receiving their signed copies of  
*The Metrology Handbook***





**Carol Singer  
receiving her much deserved  
Award of Appreciation**





**The Learning and Development planning meeting (Dilip attended and is taking the photo above)**

**The Successful Outreach & Committee Fair session— our own Chris Grachanen sitting in the front row, with Terry Conder making his presentation (below)**



## Communication Hardware Obsolescence in the Calibration Laboratory

*By Christopher L. Grachanen*



Recently I had a primary calibration system's computer and IEEE488 communication card give up the ghost. This calibration system is used to maintain standard resistors and calibrate customer resistors in our primary standards laboratory. The system was procured in the early 1990's and ran under Windows 95 operating system. The calibration system has given years and years of faithful service without any real problems. At a minimum, the calibration system was engaged once a week running our automated standard resistor maintenance program. So now the saga begins.

As any good calibration practitioners we routinely back up all measurement data. In addition, we periodically mirror calibration system hard drives in case of catastrophic failure. So you would think when our calibration system's computer and IEEE488 communication card failed it would just be a matter of 1) procuring a new IEEE488 card, 2) obtaining a new computer, 3) populating the new hard drive with our backup copy of the old hard drive, 4) reconnecting the communication buss and 5) running the calibration system application software. Alas, this logical plan had a fatal flaw. I had mentioned the calibration system was procured in the early 1990's such that all components of the system were approaching 20 years old. It turns out that the manufacturer of the IEEE488 communication card (which was bought out by another company), had long ago stop making the particular model card that was in our calibration system. One would not think this a show stopper as IEEE488 codes are standardized and a newer communication card and its drivers and other support files should execute the calibration application software the same as the older IEEE488 communication card. Unfortunately, the calibration application software was written around our defunct IEEE488 communication card. We painfully learned over the course of several days that our old card had some unique feature which was apparently queried by our calibration application software. This query routine was hard coded in the application calibration software. This situation did not allow a newer IEEE488 communication card to communicate correctly with the calibration application software and as such would time out and lock up the software. Despite our best efforts we were unable to locate a new or used replacement for our original IEEE488 communication card. So we were faced with having to update our calibration application software in order to be able to use a newer IEEE488 communication card. This should not present a problem that some rainy day funds could not correct. Unfortunately, some companies have policies that require all software to be approved, procured and administered by the company's IT department. Though not insurmountable it does present additional obstacles as well as appreciable delay attributable to a multifaceted approval process.

The moral of this saga is even though you may have periodically upgraded the components of your calibration system i.e. hardware / firmware, and have a good software backup program in place, you may still be vulnerable to operations interruption because of an obsolete IEEE488 communication card. It would be time well spent to take a few minutes to look around your laboratory and see if your operations may be vulnerable to the same obsolescence as we experienced.



**Photo taken during our quarterly teleconference call meeting.  
Around the table, left to right,  
Chris Grachanen, Jay Bucher, Heather Wade  
and Graeme Payne. Dilip Shah is taking the photo.**

## **MQD TREASURER'S REPORT**

Jun 2009

### Per Jun 2009 Bank Statement

MQD continues to have a strong balance sheet (Statement of Financial Position) with over \$171,000.00 combined checking and saving account balances.

|                                                   |             |
|---------------------------------------------------|-------------|
| Commercial Checking Account Ending Leger Balance: | \$91,698.15 |
| Money Market Saving Account Ending Balance:       | \$79,608.04 |

### For the twelve months ended June 30, 2009

|                                  |          |
|----------------------------------|----------|
| Membership Revenue:              | \$29,277 |
| Investment Income:               | \$457    |
| Royalties Income (July to April) | \$3,935  |
| Total revenues for all sources   | \$33,669 |
| Budgeted MQD Expenses:           | \$16,977 |

ASQ's corporate annual financial audit was completed in Aug 2009 with no discrepancies noted.

Respectfully Submitted,  
Christopher L. Grachanen

**Minutes from August meeting  
Held during the 2009 NCSL International  
Workshop & Symposium  
San Antonio, Texas  
July 29th, 2009**

In attendance: Dilip Shah, Jay Bucher, Chris Grachanen, Heather Wade, Graeme Payne  
In attendance by phone: Leta Thrasher (ASQ Admin), Mike Boothe (ASQ-MQD Secretary)

This copy of minutes were recorded by Heather Wade.

4:15pm, meeting called to order by Jay Bucher.

Treasurer's Report

Chris Grachanen reports \$91,698.15 in account as of last statement. Checking account is off by \$1. Leta Thrasher requests the bank sheet & audit by August 15, 2009. Jay will get those to Mike Sumich for completion. There is a \$10,000 obligation for NCSLI/ASQ-MQD DVD. This also includes the Max J. Unis Award. There is \$79,608.04 in the Money Market Fund.

ASQ-CCT

Jay is spearheading the first workshop.

Jay is also proctoring ASQ-CCT exam at NCSLI conference on Friday, July 31, 2009, for which there are 5 candidates registered.

Pilot Survey

Restriction for volunteers limits volunteers in number & in depth of experience (i.e., volunteers are restricted to only those who have participated in workshops).

Chris Grachanen is seeking survey announcement to be sent to ASQ-MQD & NCSLI mailing lists, seeking survey volunteers.

ASQ Coins

Two coins are requested to be sent to the gentleman who has already paid for them. Jay Bucher will forward the contact information to Leta.

Website

Jay reports new website through ASQ. He's working with Val at ASQ, and is the new website liaison for MQD's website.

Regional Counselors

Jay Bucher found no requirements to have Regional Counselors. Jay Bucher motions for removal of "Regional Counselors" from ASQ-MQD. Dilip Shah seconds the motion. All agree in favor, none against motion.

ASQ-MQD Booth

New ASQ-MQD display booth arranged for by Dilip Shah. It is a banner-type. It is light (30 lbs) and easy to set-up, tear-down, and ship. Dilip is given an "At-A-Boy" for display. Dilip requests from Leta an asset number for the display. Dilip to forward display information to Leta.

*(Continued on page 12)*

*(Continued from page 11)*

### Announcements

Mike Boothe is new Secretary of ASQ-MQD

Elias Monreal is the new Voice Of Customer “VOC”

Brandon Downing is to be the ASQ-MQD Historian and has been sent information for archiving.

### New Member Recruitment

Jay Bucher requests that in the interest of attracting new members to ASQ-MQD that all but the last 4 issues of The Standard be posted on the ASQ-MQD website. Jay will send pdfs of 1993 to 1998 articles.

### Measurement Science Conference 2010 (MSC)

MSC 2010 in Pasadena, California. In attendance representing ASQ-MQD will be Jay Bucher, Dilip Shah, Chris Grachanen, and Graeme Payne. Jay Bucher motions for ASQ to support ASQ-MQD attendance at MSC. Dilip seconds the motion. All agree in favor, none against motion. To receive MQD support, attendees must provide booth duty and attend the quarterly teleconference call.

### Other Upcoming Conferences & Workshops

- December 2009: next ASQ-CCT workshop
- August 29, 2009: next ASQ Leadership Conference (Jay attending)
- May 23, 2010: WCQI, in St. Louis
- o Abstracts due August 3, 2009: If abstracts accepted, then ASQ-MQD will support
- ✦ Dilip submitting abstract
- ✦ Graeme also wants to submit an abstract.
- ✦ September 11-13, 2009: “Ideas Into Action” in Milwaukee, WI (Jay attending)
- ✦ October 16-19, 2009: “Ideas Into Action” in Denver, CO

### Support of ASEE (American Society for Engineering Education)

ASQ-MQD supports ASEE with NCSLI & MSC. Jay Bucher motions to continue support with booth, personnel (at May or June conference) and/or documents. Graeme seconds the motion. All agree in favor, none against motion.

### ASQ-MQD Fellows

Graeme Payne seeks interest for Division members with more than 5 years participation to be nominated as “Fellows”. Questions presented: Are they interested in being nominated? Are they interested in completing the paperwork involved? Dilip Shah mentions that there is a Fellow-mentoring process. Deadline for nominations is December 31, 2009.

### Member Reports

Heather Wade – nothing to report

Mike Boothe – requests a copy of meeting minutes & reports because of his poor-quality phone connection for this conference call.

Jay Bucher welcomes Sunday E. Lijofi, ASQ-CCT from Lagos, Nigeria.

Sunday E. Lijofi requests the primary use of SI units instead of English units on the CCT (due to SI use internationally). Jay Bucher agrees and supports this request.

4:45pm, Dilip Shah motions to adjourn meeting. Graeme Payne seconds the motion.

*(Continued on page 13)*

(Continued from page 12)

Post-meeting discussions:

Office of Personnel Management has accepted “Metrology” job description. Hopefully this will be able to be launched into SOC in 10 years.

There are remarks that it should be remembered that ASQ certification is recognized worldwide.



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### ASQ Measurement Quality Division 2009-2010 Budget

| ACCOUNT DESCRIPTION                                      | ADMIN              | Pubs        | Conference (NCSLI)  | Conference (MSC)    | Conference (ASQ Regional, Division) | DAC                 | Conference (WCQI)   | Total                |
|----------------------------------------------------------|--------------------|-------------|---------------------|---------------------|-------------------------------------|---------------------|---------------------|----------------------|
| <b>REVENUE</b>                                           |                    |             |                     |                     |                                     |                     |                     |                      |
| Dues                                                     | \$20,000.00        |             |                     |                     |                                     |                     |                     | \$20,000.00          |
| Retail Sales                                             |                    |             |                     |                     |                                     |                     |                     | \$ -                 |
| Advertising                                              | \$400.00           |             |                     |                     |                                     |                     |                     | \$400.00             |
| Conference                                               |                    |             |                     |                     |                                     |                     |                     | \$ -                 |
| Investments                                              |                    |             |                     |                     |                                     |                     |                     | \$ -                 |
| Interest                                                 | \$1,500.00         |             |                     |                     |                                     |                     |                     | \$1,500.00           |
| Royalties                                                | \$3,500.00         |             |                     |                     |                                     |                     |                     | \$3,500.00           |
| Other                                                    |                    |             |                     |                     |                                     |                     |                     | \$ -                 |
| <b>TOTAL REVENUE</b>                                     | <b>\$25,400.00</b> | <b>\$ -</b> | <b>\$ -</b>         | <b>\$ -</b>         | <b>\$ -</b>                         | <b>\$ -</b>         | <b>\$ -</b>         | <b>\$25,400.00</b>   |
| <b>EXPENSES</b>                                          |                    |             |                     |                     |                                     |                     |                     |                      |
| Printing and Production                                  | \$300.00           |             |                     |                     |                                     |                     |                     | \$300.00             |
| Cost of Sales                                            |                    |             |                     |                     |                                     |                     |                     | \$ -                 |
| Promotional Items (including MQD shirts for booth duty)  | \$250.00           |             | \$300.00            | \$300.00            | \$300.00                            |                     | \$300.00            | \$1,450.00           |
| Committees (Standards)                                   | \$3,500.00         |             |                     |                     |                                     |                     |                     | \$3,500.00           |
| Postage and Shipping                                     |                    |             | \$350.00            | \$350.00            | \$200.00                            |                     | \$350.00            | \$1,250.00           |
| Contract and Professional                                |                    |             |                     |                     |                                     |                     |                     | \$ -                 |
| Meetings and Meals                                       |                    |             | \$350.00            | \$350.00            | \$350.00                            | \$200.00            | \$350.00            | \$1,600.00           |
| Travel                                                   |                    |             | \$3,500.00          | \$3,500.00          | \$3,000.00                          | \$1,000.00          | \$3,500.00          | \$14,500.00          |
| Supplies                                                 |                    |             |                     |                     |                                     |                     |                     | \$ -                 |
| Max Unis Award for 2009 (\$500 + travel)                 | \$1,000.00         |             |                     |                     |                                     |                     |                     | \$1,000.00           |
| Max Unis Award for 2010 (\$500 + travel)                 | \$1,000.00         |             |                     |                     |                                     |                     |                     | \$1,000.00           |
| Joe Simmons Scholarship (2009-2010)                      | \$3,000.00         |             |                     |                     |                                     |                     |                     | \$3,000.00           |
| Joint sponsorships (NCSLI Training DVD)                  | \$10,000.00        |             |                     |                     |                                     |                     |                     | \$10,000.00          |
| Telephone (teleconferences)                              | \$600.00           |             |                     |                     |                                     |                     |                     | \$600.00             |
| Partner Payments (Division and other Prof. Associations) |                    |             |                     |                     |                                     |                     |                     | \$ -                 |
| Other                                                    |                    |             |                     |                     |                                     |                     |                     | \$ -                 |
| <b>TOTAL EXPENSES</b>                                    | <b>\$19,650.00</b> | <b>\$ -</b> | <b>\$4,500.00</b>   | <b>\$4,500.00</b>   | <b>\$3,850.00</b>                   | <b>\$1,200.00</b>   | <b>\$4,500.00</b>   | <b>\$38,200.00</b>   |
| <b>NET INCOME/(LOSS)</b>                                 | <b>\$5,750.00</b>  | <b>\$ -</b> | <b>\$(4,500.00)</b> | <b>\$(4,500.00)</b> | <b>\$(3,850.00)</b>                 | <b>\$(1,200.00)</b> | <b>\$(4,500.00)</b> | <b>\$(12,800.00)</b> |

## THE LEARNING CURVE

By Phil Painchaud



This is the fifty-ninth installment in a continuous series of tractates originally charted to be on the general subject of Metrology Education. We have since November 1992 been writing these essays in the format of open letters to our most lenient Boss, the Managing Editor of this, the official journal

of the MQD. With increasing frequency we have found it necessary to deviate from our charted subject. However this time; we are pleased to say that we are again back on track. We shall, as promised, continue, and complete, our analysis of the ‘White Paper’ originally presented in Column 55, which analysis we started in Column 56.

Dear Boss:

I dislike being the one to tell you that you are ‘all wet’; I didn’t blow out 90 candles at the fête that my daughters arranged here a while back. In fact I didn’t blowout any. Since we had experienced a devastating fire storm a short while before, they, my two daughters, could not get a Fire Permit for a conflagration that large. To make certain, the Fire Chief, the Mayor, two members of the City Council, and the City Manager all attended the ‘shin dig’—along with about 50 people in all. We were sorry that you could not make it, but we do realize that it is a far piece between De Forest, WI and Brea, CA.

This column is going to be uncharacteristically brief for me as I am having eye trouble. A couple of weeks ago I had major eye surgery on both eyes. The ophthalmologist told me that it will be another month or so before my eyes stabilize enough to prescribe new glasses. At the moment reading text is very difficult for me. But here goes anyhow. Let us continue where we left off in Column 58. If you do not have that available, go find your hard copy of Column 55 which contains the entire White Paper entitled “**EDUCATION IN MEASUREMENT SCIENCE**”.

We left off our analysis in Column 58 at Mr. Hume’s final section in his essay.

—“**The Solution:**

—“*The problem as stated is multi-dimensional. It covers every scientific discipline including the social sciences. It covers education at every level from primary to post-graduate. The solution must begin with a recognition that the problem exists, and that problem is in education. No such formal recognition exists either in the Society or in education institutions. Since the problem is in education, the solution is in education*”.

Mr. Hume has stated the measurement education problem as succinctly as possible in this first paragraph. The “Society” he refers to is a large electrical/electronic engineering association for whose journal he was writing the paper. On the other hand I believe that it equally applies to many other professional groups and especially to our own MQD/ASQ. Societal efforts in promoting measurement education so far appear to be solely towards the vocational training of technicians—not that this is bad, but it does not contribute to a solution of the problem as outlined by Mr. Hume. Don’t misinterpret me, we always are in need of qualified technicians and calibrators, but we need fully educated Metrologists even more.

—“*The basics of measurement should be a part of each course in science. A general course in “measurements” will not be sufficiently focused on the specific problems a given student will encounter in their professional life. Institutions of higher education should actively seed the involvement of practitioners of measurement science [i.e., Metrologists, pap] during the development of curricula and, perhaps, even in the teaching of some course material.*”

The stressing of measurement within physical science courses has been (and is being) tried by several institutions. Generally it has failed to achieve the results in the necessary comprehension of measurement science basics that we practitioners of Metrology feel are vital. This is probably due to at

(Continued on page 16)

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least two reasons: Reluctance by some faculty members and their administrations to change their established teaching protocols, and the renitency of many educators to recognize the existence of the Measurement Sciences as distinct independent entities. As an example: Several years ago I was interviewing a professor, the head of the Department of Mechanical Engineering of a very prominent state university who had applied for a sizable grant to buy electronic test equipment. I had questioned the need for such equipment in the teaching of Mechanical Engineering and pointed out to the man that the funds were from a trust specifically dedicated to Metrology Education. He replied that there was no such thing as Metrology and hence declared it a non-topic in our interview. He offered to send me a copy of a book that he had published on Mechanical Engineering and was using as a required text in his department. The book, albeit old by today's standards, proved to be a valuable state of the art (for that time) text on measurements in the mechanical area. The man had been teaching fundamental mechanical discipline Metrology for years and refused to recognize or to admit it! I have encountered variations this attitude a number of times over the years.

—*“It is clear, however, that no progress will be made until the problem becomes apparent at the highest levels of the educational systems. A piecemeal solution at the lowest levels will not work, whether restricted geographically or in a degree program.”*

This statement by Mr. Hume is precisely what I was saying in the White Paper that was published in an earlier issue of this journal (**“WHY DO WE INSIST ON REINVENTING THE WHEEL?”**, ***THE STANDARD***, Volume 23, Issue #1 March 2009, Page 19). Read it and you will find out that we both are saying that you cannot cause the type of change required by pushing up from below. It must come down from the top. The solution in both academia and in industry is to convince top management to issue the necessary edict and enforce it...

—*“A solution has to involve the institutions of higher education. The institutions must be convinced of the importance of measurement science and make it a part of the education of the academically inclined students who will become the professors of the future. This solution can be faulted in that it is slow and the benefits will not be apparent for many years. One can't help but wonder if there is some easier, simpler method, one that will produce results within four or five years. Perhaps a better solution will emerge during the review of this position paper – one that will achieve a consensus of support and that will be enthusiastically endorsed by the community of educators, engineers and scientist active in the field.”*

**Mr., Hume is so right here, somehow the upper echelons of management both in industry and in academia must be convinced of the crucial importance of the measurement sciences and that when a Metrology organization is established, it must be lead by a competent educated Metrologist. Appointing an MBA trained political type or an overly *amour propre* technician to lead such a critical organization will surely in the long run result in disaster, technical, administrative or both—a properly educated Administrative Metrologist is mandatory in this position,**

—*“Throughout this paper, I have used the term, measurement science, instead of metrology to avoid the usual restricted (and incorrect) sense of the latter. By measurement science I mean that body of knowledge one should use in the practice of measurement that lies outside of and is independent of the specific technical discipline.”*

(*Note:* Mr. Hume's definition of several years ago used herein has become fact in the BIPM/CIPM/ISO recent joint directive which states, **“Metrology is the Science of Measurement, irrespective of technology, or of level of precision”**. He was apparently not aware at the time of his writing this White Paper of the INTERNATIONAL STANDARDIZING ORGANIZATION's (ISO) definition published in 1993 in their, *INTERNATIONAL VOCABULARY of BASIC and*

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*GENERAL TERMS in METROLOGY* which states, **“Metrology: is the science of measurement. NOTE: Metrology includes all aspects, both the theoretical and the practical, with reference to measurements, whatever their uncertainty, and in whatever fields of science or technology they occur.”**—pap).

—*“It should be noted that some would argue whether such independence can exist. Where mistakes are made in the restatement of various positions and arguments, they are entirely mine. If some of the points strike a responsive chord it is due to the quality of the discussion that occurred during the session.”*

I agree with Mr. Hume about doubts that such independence can exist in academia at least. I have encountered the academic mindset before, enough times to realize the magnitude of the task required to affect such a change. On the other hand such change has in the past been accomplished in industry where wise, far seeing, management has been in charge.

Well Boss that is about it for now. Maybe by next issue I shall have had my eyesight back—oh, I did tell you in the beginning of this Column that I had major surgery on my eyes and I have been unable to read normal size print except with the aid of a magnifying glass. Maybe by then I will be able to review your new book on Ethics (without the magnifier) for material for my next column. I hope that this column brings up some controversy from our readers (if we have any); if so I can be reached at the usual haunts:

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